

WHAT IS CLAIMED IS:

1. A method for generating a three-dimensional object comprising the steps of:
  - Scanning an object model with a light beam of a light source, wherein the scanning optical system operates confocally,
  - Detecting the light returning from the object model,
  - Generating object model data from the detected light and
  - Transmitting the object model data to an apparatus for object generation.
2. The method as defined in Claim 1, wherein the scanning optical system has at least one illumination pinhole and one detection pinhole.
3. The method as defined in Claim 1, wherein the scanning operation is controlled by a control device, and the light beam is deflected by a beam deflection device.
4. The method as defined in Claim 1, wherein the light returning from the object model is reflected light and/or scattered light and/or fluorescent light.
5. The method as defined in Claim 1, wherein scanning of the object model is accomplished with a confocal scanning microscope.
6. The method as defined in Claim 1, wherein object generation is accomplished substantially by material-removing shaping.
7. The method as defined in Claim 1, wherein as a function of an intensity value and/or a wavelength and/or a polarization of the detected object model light, the generated object is generated from various materials.

8. The method as defined in Claim 1, wherein in order to depict dynamic processes of an object plane, the object planes detected at different times are assembled into a three-dimensional object.
- 5 9. A method for generating a three-dimensional object comprising the steps of:
  - Scanning an object model with a light beam of a light source, wherein the scanning optical system operates confocally,
  - Detecting the light returning from the object model,
  - Generating object model data from the detected light and
  - 10 • Transmitting the object model data to an apparatus for object generation, wherein object generation is accomplished substantially using laser beam lithography methods.
- 15 10. The method as defined in Claim 9, wherein the laser beam of the laser beam lithography machine exposes a polymer liquid that can be cured with laser light.
11. The method as defined in Claim 9, wherein rapid prototyping methods are used for object generation.
- 20 12. The method as defined in Claim 9, wherein as a function of an intensity value and/or a wavelength and/or a polarization of the detected object model light, the generated object is generated from various materials.
- 25 13. The method as defined in Claim 9, wherein in order to depict dynamic processes of an object plane, the object planes detected at different times are assembled into a three-dimensional object.

14. A system for generating a three-dimensional object comprising:
  - A scanning optical system for scanning an object model;
  - A detector detecting the light returning from the object model;
  - A processing unit generating object model data from the detected light and
  - An apparatus for object generation.
15. The system of Claim 14, wherein the scanning optical system has at least one illumination pinhole and one detection pinhole.
16. The system of Claim 14, wherein the scanning operation is controlled by a control device, and the light beam is deflected by a beam deflection device.
17. The system of Claim 14, wherein scanning optical system is a confocal scanning microscope.
18. The system of Claim 14, wherein apparatus for object generation is a laser beam lithography machine.
19. The system of Claim 18, wherein the laser beam of the laser beam lithography machine exposes a polymer liquid that can be cured with laser light.